

Brass Trim for Water-Closet Bowls, Tanks, and Urinals

(Dimensional Standards)

A RECORDED VOLUNTARY STANDARD OF THE TRADE

COMMODITY STANDARDS

Simplified Practice Recommendations and Commercial Standards are developed by manufacturers, distributors, and users in cooperation with the Commodity Standards Division of the Office of Industry and Commerce, Bureau of Foreign and Domestic Commerce, and with the National Bureau of Standards.

The purpose of Simplified Practice Recommendations is to eliminate avoidable waste through the establishment of standards of practice for stock sizes and varieties of specific commodities that currently are in general production and demand. The purpose of Commercial Standards is to establish standard methods of test, rating, certification, and labeling of commodities, and to provide uniform bases for fair competition.

The adoption and use of a Simplified Practice Recommendation or a Commercial Standard is voluntary. However, when reference to a Commercial Standard is made in contracts, labels, invoices, or advertising literature, the provisions of the standard are enforceable through usual legal channels as a part of the sales contract.

A Simplified Practice Recommendation or a Commercial Standard originates with the proponent industry. The sponsors may be manufacturers, distributors, or users of the specific product. One of these three elements of industry submits to the Commodity Standards Division the necessary data to be used as the basis for developing a standard of practice. The Division, by means of assembled conferences or letter referenda, or both, assists the sponsor group in arriving at a tentative standard of practice and thereafter refers it to the other elements of the same industry for approval or for constructive criticism that will be helpful in making any necessary adjustments. The regular procedure of the Division assures continuous servicing of each effective Simplified Practice Recommendation and Commercial Standard, through review and revision, whenever, in the opinion of the industry, changing conditions warrant such action. Simplified Practice Recommendations and Commercial Standards are printed and made available by the Department of Commerce through the Government Printing Office and the Department of Commerce field offices.

UNITED STATES DEPARTMENT OF COMMERCE

Charles Sawyer, Secretary



U. S. DEPARTMENT OF COMMERCE

CHARLES SAWYER, Secretary

BUREAU OF FOREIGN AND DOMESTIC
COMMERCE

Office of Industry and Commerce

H. B. McCoy, Director

IN COOPERATION WITH
NATIONAL BUREAU OF STANDARDS

E. U. CONDON, DIRECTOR

Brass Trim for Water-Closet Bowls, Tanks, and Urinals

(Dimensional Standards)

[Effective December 15, 1950]

1. PURPOSE AND SCOPE

1.1 The purpose of this commercial standard is to establish a basis for dimensional interchangeability for those items of brass trim for water-closet bowls, tanks, and urinals known as spuds, lock nuts for spuds, flush valves for staple low tanks, float valves, flush elbows, and coupling nuts. It is also intended to provide a basis for understanding between buyers and sellers regarding dimensions and tolerances that govern the fit of trim in the fixtures and the fit of connecting parts of trim.

2. STANDARD DIMENSIONS

2.1 The dimensions given in the following illustrations and tables are standard. Thread dimensions and tolerances are taken from Handbook H28 (1944), Screw-Thread Standards for Federal Services, issued by the National Bureau of Standards.

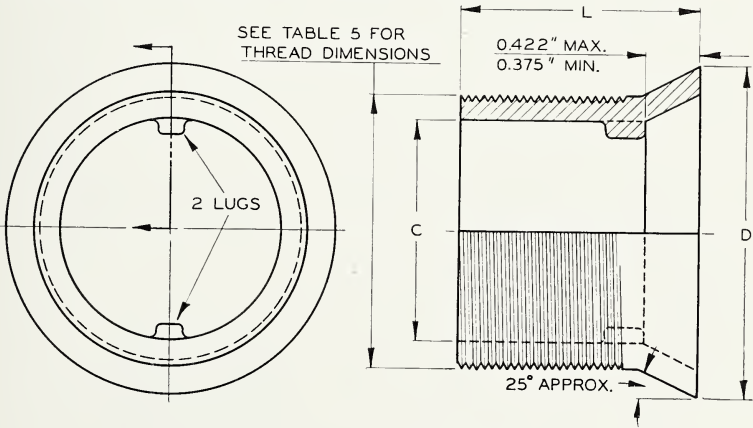


FIGURE 1. Regular spuds.

TABLE 1. Dimensions of regular spuds (inches)

Size of spud	C		D		L (nominal)
	Max.	Min.	Max.	Min.	
2	2.063	2.031	2.688	2.625	1.750
1 1/2	1.563	1.531	2.250	2.188	1.625
1 1/4	1.313	1.281	2.000	1.938	1.625

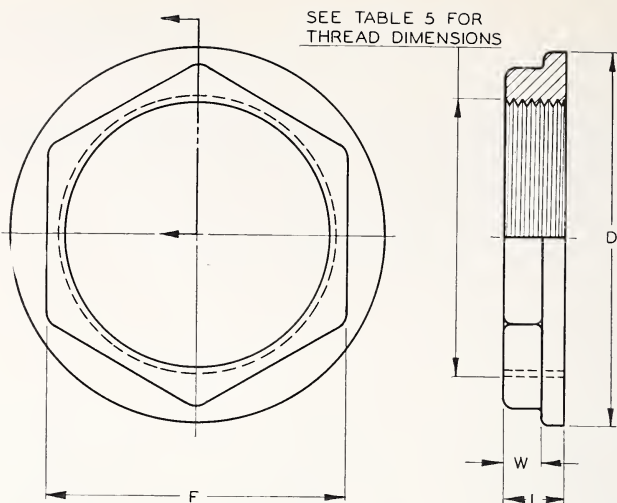


FIGURE 2. Lock nuts for regular spuds.

TABLE 2. Dimensions of lock nuts for regular spuds (inches)

Size of lock nut	D Min.	F		L Min.	W Min.
		Max.	Min.		
2	3.00	2.500	2.438	0.344	0.250
1½	2.50	2.062	2.000	.344	.250
1¼	2.25	1.813	1.750	.313	.219

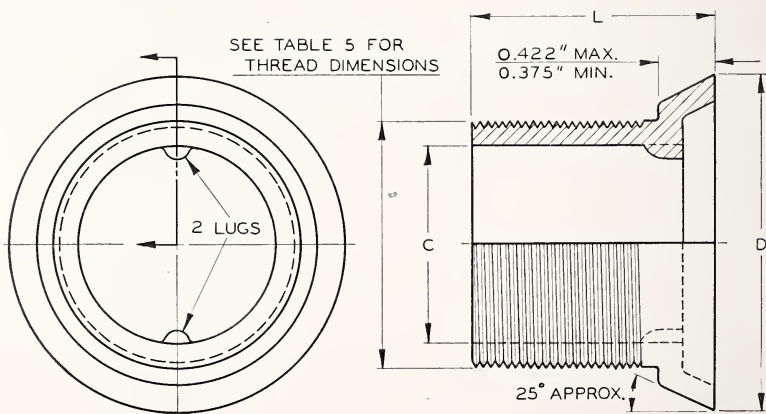
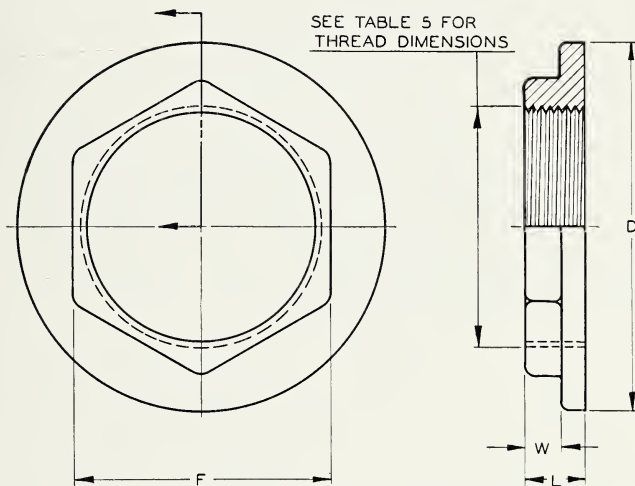


FIGURE 3. Reducing spuds.

TABLE 3. *Dimensions of reducing spuds (inches)*

Size of reducing spud ¹	C		D		L (nominal)
	Max.	Min.	Max.	Min.	
2 x 1½	1.563	1.531	2.688	2.625	1.625
2 x 1¼	1.313	1.281	2.688	2.625	1.625
1½ x 1¼	1.313	1.281	2.250	2.188	1.625
1½ x ¾	.813	.781	2.000	1.938	1.500
1 x ¾	.813	.781	1.563	1.500	1.500

¹ The smaller dimension is the thread size.

FIGURE 4. *Lock nuts for reducing spuds.*TABLE 4. *Dimensions of lock nuts for reducing spuds (inches)*

Size of lock nut ¹	D Min.	F		L Min.	W Min.
		Max.	Min.		
2 x 1½	3.000	2.062	2.000	0.344	0.250
2 x 1¼	3.000	1.813	1.750	.344	.250
1½ x 1¼	2.500	1.813	1.750	.344	.250
1½ x ¾	2.250	1.281	1.250	.313	.219
1 x ¾	1.875	1.281	1.250	.313	.219

¹ The smaller dimension is the thread size.

TABLE 5. *Threads on spuds for water-closets and urinals (including reducing spuds)*

(Dimensions in inches)

SPUD SHANKS

Nominal shank size	External thread designation ¹	Depth of thread	Major diameter of shank		Pitch diameter of shank		Minor diameter of shank	Length of thread
			Max.	Min.	Max.	Min.	Max.	Min.
2-----	2"-11½-NPSM-----	0.05792	2.3492	2.3329	2.2913	2.2832	2.2334	1½
1½-----	1½"-11½-NPSM-----	.05792	1.8752	1.8589	1.8173	1.8092	1.7594	1½
1¼-----	1¼"-11½-NPSM-----	.05792	1.6363	1.6200	1.5784	1.5703	1.5205	1½
¾-----	¾"-14-NPSM-----	.04757	1.0325	1.0191	.9849	.9782	.9373	1½

SPUD NUTS

Nominal size	Internal thread designation ¹	Major diameter of nut	Pitch diameter of nut		Minor diameter of nut	
		Min.	Min.	Max.	Min.	Max.
2-----	2"-11½-NPSM-----	2.3542	2.2963	2.3044	2.2384	2.2547
1½-----	1½"-11½-NPSM-----	1.8802	1.8223	1.8305	1.7644	1.7807
1¼-----	1¼"-11½-NPSM-----	1.6413	1.5834	1.5916	1.5255	1.5418
¾-----	¾"-14-NPSM-----	1.0365	.9889	.9956	.9413	.9547

¹ NPSM means American National straight pipe threads for mechanical joints (free fitting). See table 72, Handbook H28 (1944), Screw-Thread Standards for Federal Services, and footnote 1 for allowances on external threads.

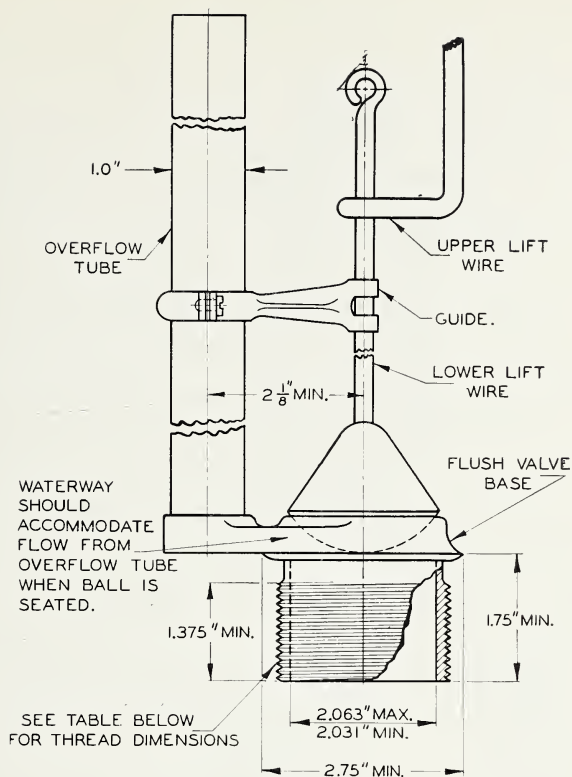


FIGURE 5. Flush valves for staple low tanks.

TABLE 6. Threads on flush valve shanks and lock nuts

(Dimensions in inches)

FLUSH VALVE SHANKS

Nominal shank size	External thread designation ¹	Depth of thread	Major diameter of shank		Pitch diameter of shank		Minor diameter of shank
			Max.	Min.	Max.	Min.	Max.
2.....	2"-11½-NPSM.....	0.05792	2.3492	2.3329	2.2913	2.2832	2.2334

FLUSH VALVE LOCK NUTS

(Same as lock nut for 2-in. spud)

Nominal size	Internal thread designation ¹	Major diameter of nut	Pitch diameter of nut		Minor diameter of nut	
		Min.	Min.	Max.	Min.	Max.
2.....	2"-11½-NPSM.....	2.3542	2.2963	2.3044	2.2384	2.2547

¹ See footnote 1, table 5.

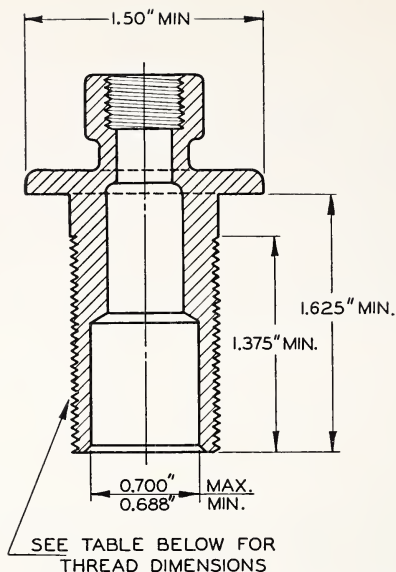


FIGURE 6. *Float valve shanks and nuts.*

TABLE 7. *Threads on float valve shanks and nuts*

(Dimensions in inches)

FLOAT VALVE SHANKS

Nominal shank size	External thread designation	Depth of thread	Major diameter of shank		Pitch diameter of shank		Minor diameter of shank
			Max.	Min.	Max.	Min.	
$1\frac{5}{16}$	$1\frac{5}{16}$ "-14NS-1.....	0.04639	0.9354	0.9214	0.8890	0.8820	0.8478

FLOAT VALVE LOCK NUTS AND COUPLING NUTS

Nominal size	Internal thread designation	Major diameter of nut	Pitch diameter of nut		Minor diameter of nut	
		Min.	Min.	Max.	Min.	Max.
$1\frac{5}{16}$	$1\frac{5}{16}$ "-14NS-1.....	0.9375	0.8911	0.8981	0.8602	0.8679

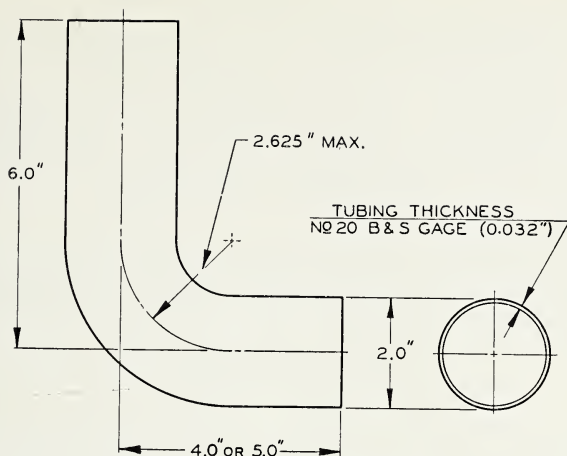


FIGURE 7. *Flush elbows.*

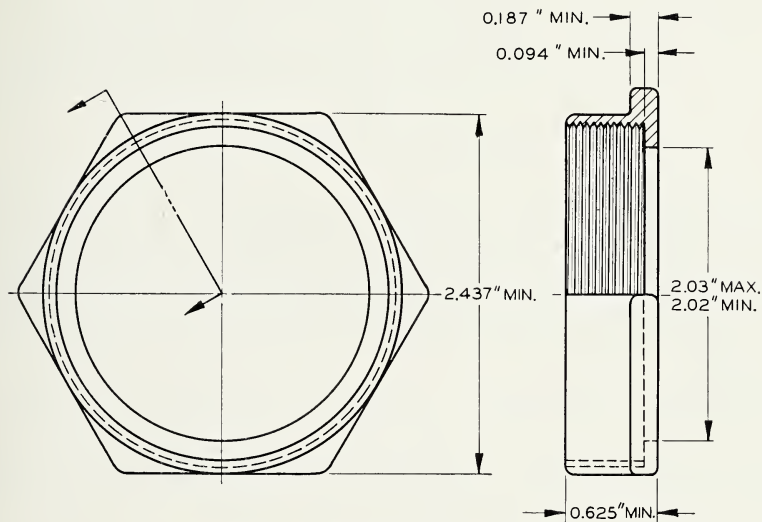


FIGURE 8. *Two-inch coupling nuts.*

TABLE 8. *Two-inch coupling nut threads*

(Dimensions in inches)

Nominal size	Internal thread designation ¹	Major diameter of nut	Pitch diameter of nut		Minor diameter of nut	
		Min.	Min.	Max.	Min.	Max.
2	2"-11½-NPSM	2.3542	2.2963	2.3044	2.2384	2.2547

¹ See footnote 1, table 5.

3. GUARANTEE

3.1 When the purchaser desires assurance that brass trim is being furnished in accordance with this dimensional standard, a statement of compliance may be requested. Manufacturers may furnish such a statement voluntarily. The statement given below is recommended for use on labels, invoices, guarantees, etc., in conjunction with the manufacturer's name and address. When labels are used, they may be affixed to articles that comply with the standard, or to packages containing them.

The manufacturer declares that the brass trim¹ furnished herewith conforms with dimensions given in Commercial Standard CS172-50, as developed by the trade under the procedure of the Commodity Standards Division, and issued by the United States Department of Commerce.

4. EFFECTIVE DATE

4.1 Having been passed through the regular procedure of the Commodity Standards Division, and approved by the acceptors herein-after listed, this commercial standard was issued by the United States Department of Commerce, effective from December 15, 1950.

EDWIN W. ELY,

Chief, Commodity Standards Division.

HISTORY OF PROJECT

Industry request for the standard.—Dimensional data available to the Vitreous China Plumbing Fixtures Association, on brass trim used extensively with their products, were considered by the Association in determining the possibility of securing greater interchangeability. A proposal covering dimensions believed most suitable for the purpose was submitted by the Association, under date of June 10, 1948, to the Commodity Standards Division for development as a commercial standard.

Development of the standard.—A preliminary draft of the proposed standard was referred to the manufacturers for review and comment, and an adjusted draft embodying concurrent suggestions was considered at a conference of manufacturers of brass goods and plumbing fixtures held by the Commodity Standards Division on June 22, 1949. Recommendations of the conference were embodied in a draft that was circulated to leading distributors and users, as well as manufacturers, on August 10, 1949, for further review and comment. A second adjusted draft, modified in accordance with composite recommendations to the Commodity Standards Division, was circulated to the trade on June 14, 1950, for written acceptance.

Establishment of the standard.—Upon receipt of official acceptances estimated to represent a satisfactory majority of production, by

¹ Name of article or articles that conform may be substituted for the words "brass trim".

volume, of the products covered, and in the absence of active valid opposition, the establishment of the commercial standard, identified as CS172-50, was announced to the industry on December 15, 1950.

Project Manager: A. S. Best, Commodity Standards Division, Office of Industry and Commerce.

Technical Adviser: D. R. Miller, Metrology Division—Gages, National Bureau of Standards.

STANDING COMMITTEE

The following individuals comprise the membership of the standing committee, which is to review, prior to circulation for acceptance, revisions proposed to keep the standard abreast of progress. Comment concerning the standard and suggestions for revision may be addressed to any member of the committee or to the Commodity Standards Division, Office of Industry and Commerce, United States Department of Commerce, which acts as secretary for the committee.

D. J. CRANE, Eljer Co., Ford City, Pa. (chairman).

KRELL Bosler, John Douglas Co., Cincinnati 16, Ohio.

A. H. GOEPEL, Scovill Manufacturing Co., Waterville 14, Conn.

BENJAMIN CADBURY, Hajoca Corp., Philadelphia 1, Pa.

A. S. PENT, Glauber, Inc., New York 21, N. Y.

JAMES I. KENNEDY, 1622 Grand Central Terminal, New York 17, N. Y. (representing the National Association of Master Plumbers).

A. L. JOHNSON, Universal-Rundle Corp., Box 960, New Castle, Pa.

F. MORGAN BROWN. Western Plumbing Officials Association, Los Angeles 13, Calif.

ACCEPTANCE OF COMMERCIAL STANDARD

If acceptance has not previously been filed, this sheet properly filled in, signed, and returned will provide for the recording of your organization as an acceptor of this commercial standard.

Date_____

Commodity Standards Division,
Office of Industry and Commerce,
U. S. Department of Commerce,
Washington 25, D. C.

Gentlemen:

We believe that the Commercial Standard 172-50 constitutes a useful standard of practice, and we individually plan to utilize it as far as practicable in the

production ¹ distribution ¹ purchase ¹

of brass trim for water-closet bowls, tanks, and urinals. We reserve the right to depart from it as we deem advisable.

We understand, of course, that only those articles which actually comply with the standard in all respects can be identified or labeled as conforming thereto.

Signature of authorized officer_____

(in ink)

(Kindly typewrite or print the following lines)

Name and title of above officer_____

Organization_____

(Fill in exactly as it should be listed)

Street address_____

City, zone, and State_____

¹ Underscore which one. Please see that separate acceptances are filed for all subsidiary companies and affiliates which should be listed separately as acceptors. In the case of related interests, trade associations, trade papers, etc., desiring to record their general support, the words "General support" should be added after the signature.

TO THE ACCEPTOR

The following statements answer the usual questions arising in connection with the acceptance and its significance:

1. *Enforcement.*—Commercial standards are commodity specifications voluntarily established by mutual consent of those concerned. They present a common basis of understanding between the producer, distributor, and consumer and should not be confused with any plan of governmental regulation or control. The United States Department of Commerce has no regulatory power in the enforcement of their provisions, but since they represent the will of the interested groups as a whole, their provisions through usage soon become established as trade customs, and are made effective through incorporation into sales contracts by means of labels, invoices, and the like.

2. *The acceptor's responsibility.*—The purpose of commercial standards is to establish, for specific commodities, nationally recognized grades or consumer criteria, and the benefits therefrom will be measurable in direct proportion to their general recognition and actual use. Instances will occur when it may be necessary to deviate from the standard and the signing of an acceptance does not preclude such departures; however, such signature indicates an intention to follow the commercial standard where practicable in the production, distribution, or consumption of the article in question.

3. *The Department's responsibility.*—The major function performed by the Department of Commerce in the voluntary establishment of commercial standards on a Nation-wide basis is fourfold: first, to act as an unbiased coordinator to bring all interested parties together for the mutually satisfactory adjustment of trade standards; second, to supply such assistance and advice as past experience with similar programs may suggest; third, to canvass and record the extent of acceptance and adherence to the standard on the part of producers, distributors, and users; and fourth, after acceptance, to publish and promulgate the standard for the information and guidance of buyers and sellers of the commodity.

4. *Announcement and promulgation.*—When the standard has been endorsed by a satisfactory majority of production or consumption in the absence of active valid opposition, the success of the project is announced. If, however, in the opinion of the standing committee or of the Department of Commerce, the support of any standard is inadequate, the right is reserved to withhold promulgation and publication.

ACCEPTORS

The organizations listed below have individually accepted this standard for use as far as practicable in the production, distribution, or purchase of brass trim for water-closet bowls, tanks, and urinals. In accepting the standard, they reserved the right to depart therefrom as they individually deem advisable. It is expected that articles which actually comply with the requirements of this standard in all respects will be regularly identified or labeled as conforming thereto, and that purchasers will require such specific evidence of conformity.

ASSOCIATIONS

(General Support)

American Society of Sanitary Engineering, McKeesport, Pa.
American Specification Institute, Chicago, Ill.
Building Officials Conference of America, Washington, D. C.
Central Supply Association, Chicago, Ill.
National Association of Master Plumbers, New York, N. Y.
Vitreoous China Plumbing Fixtures Association, Washington, D. C.
Western Plumbing Officials' Association, Inc., Los Angeles, Calif.

FIRMS AND OTHER INTERESTS

AAA Corp., The, Gadsden, Ala.
Abingdon Potteries, Inc., Abingdon, Ill.
Aitchison-Richmond Supply Co., St. Joseph, Mo.
Alamo Pottery, Inc., San Antonio, Tex.
Alert Pipe & Supply Co., Bay City, Mich.
American Plumbers Supply Co., Toledo, Ohio.
American Plumbing & Steam Supply Co., Tacoma, Wash.
American Radiator & Standard Sanitary Corp., Pittsburgh, Pa.
Andrews, Jones, Biscoe & Goodell, Boston, Mass.
Atlas Brass Foundry Co., Columbus, Ohio.
Auchinachie & Sons, Binghamton, N. Y.
Barnes Manufacturing Co., Mansfield, Ohio.
Barrett Supply Co., Augusta, Ga.
Barthmaier, Eugene V., Philadelphia, Pa.
Basche, Sage Hardware Co., Baker, Ore.
Bay Hardware, Coos Bay, Ore.
Bayonne Plumbing Supply Co., Inc., Bayonne, N. J.
Berndt, Hugo W., Milwaukee, Wis.
Bethlehem Plumbing Supply Co., Bethlehem, Pa.
Biggs-Kurtz Co., Grand Junction, Colo.
Birdsall, W. A., & Co., Linden, N. J.
Blackwell-Wielandy Co., St. Louis, Mo.
Blodgett Supply Co., Inc., Burlington, Vt.
Bradley, J. R., Co., Reno, Nev.
Braman Dow & Co., Boston, Mass.
Briggs Manufacturing Co., Detroit, Mich.
Brooks-Borg, Des Moines, Iowa.
Bruce-Rogers Co., Fort Smith, Ark.
Buffalo, City of, Architectural Service, Division of Buildings, Department of Public Works, Buffalo, N. Y.
Builders Supply Co., Superior, Wis.
Burlington Brass Works, Burlington, Wis.
Canfield Supply Co., Kingston, N. Y.
Careva Co., Inc., York, Pa.
Carstens Brothers, Ackley, Iowa.
Case, W. A., & Son Manufacturing Co., Buffalo, N. Y.
Cedar Rapids Pump & Supply Co., Cedar Rapids, Iowa.
Central of Georgia Railway Co., Savannah, Ga.
Chandler Co., Cedar Rapids, Iowa.
Channel Co., Long Beach, Calif.
Chase Brass & Copper Co., Waterbury, Conn.
Chicago Pottery Co., Chicago, Ill.
Chesco Co., New York, N. Y.
Closs, E., Co., Inc., Sparta, N. J.
Clow, James B., & Sons, Chicago, Ill.
Cole, Geo. H., Supply Co., Troy, N. Y.
Connor Co., Peoria, Ill.
Conrad, Hays, Simpson & Ruth, Cleveland, Ohio.

Consolidated Supply Co., Portland, Ore. (General support.)
Cook Manufacturing Co., Walnut, Calif.
Corbit's Inc., Reading, Pa.
Coyne & Delany Co., Brooklyn, N. Y.
Crane Co., Chicago, Ill.
Cullen Co., Chicago, Ill.
Dalziel Plumbing Supplies, San Francisco, Calif.
Dericks, John H., Passaic, N. J.
Detroit, City of, Department of Public Works, Detroit, Mich.
Detroit, City of, Department of Buildings & Safety Engineering, Detroit, Mich.
Douglas, John, Co., Cincinnati, Ohio.
Dubuque, R. A., Supply Co., St. Louis, Mo.
Du-Kane Supply Co., Pittsburgh, Pa.
Duner Co., Chicago, Ill.
Dunning, R. B., & Co., Bangor, Maine.
Elizabeth Plumbing & Heating Supply Co., Elizabeth, N. J.
Eljer Co., Ford City, Pa.
Ellis, Sol, & Sons, Inc., Chicago, Ill.
Emery Industries, Inc., Cincinnati, Ohio.
Engineering Systems, Chicago, Ill.
Fall River Steam & Gas Pipe Corp., Fall River, Mass.
Federal Huber Co., Chicago, Ill.
Fick Bros., Reading, Pa.
Field & Shorb Co., Decatur, Ill.
Fleck Co., Camden, N. J.
Florida Automobile & Gas Engine Co., Tampa, Fla.
Fords Porcelain Works, Perth Amboy, N. J.
Frost Co., Kenosha, Wis.
Galloup Pipe & Supply Co., Battle Creek, Mich.
Gardner, H. Sumner, Binghamton, N. Y.
Gefro Supply Inc., West New York, N. J.
Gibbons, M. J., Supply Co., Dayton, Ohio.
Gibbons, M. J., Supply Co., Middletown, Ohio.
Gibson Schlemmer Co., Cincinnati, Ohio.
Glauber Brass Inc., Kinsman, Ohio.
Glauber Inc., New York, N. Y.
Grady Plumbing Co., Carbondale, Ill.
Graf & Dellward, Inc., Buffalo, N. Y.
Green, Raymond C., & Co., Jenkintown, Pa.
Hahn, Stanley W., Detroit, Mich.
Hajoca Corp., Philadelphia, Pa. (including 32 distributing branches).
Hanson & Gavin, Virginia, Minn.
Harlet, Ellington & Day, Inc., Detroit, Mich.
Hartford Plumbing Supply Inc., Hartford, Conn.
Hedges & Brother, Newark, N. J. (General support).
Hoe Supply Co., Christopher, Ill.
Holyoke Supply Co., Holyoke, Mass.
Hospital Bureau of Standards & Supplies, Inc., New York, N. Y.
Hubbard, S. B., Co., Jacksonville, Fla.
Hughes Heating & Plumbing Co., Minneapolis, Minn.
Hunter, Alfred J., & Co., Muskegon, Mich.
Hunting Co., Auburn, N. Y.
Hunting Supply Corp., Watertown, N. Y.
Ideal Manufacturing & Supply Co., Oskaloosa, Iowa.
Industrial Supply Co., Terre Haute, Ind.
Interstate Hardware Co., Inc., Bristol, Tenn.
I-X-L Pump & Manufacturing Co., Inc., Philadelphia, Pa.
Jacobson, A. D., Plumbing & Heating Co., Inc., Kansas City, Mo.
Jahns Supply Co., Fort Worth, Tex.
James, W. T., Hardware & Plumbing Co., Bisbee, Ariz.
Jardine Plumbing Co., Chillicothe, Ohio.

Jefferson Supply Co., Pine Bluff, Ark.
 Jersey Central Lines, New York, N. Y.
 Johnson, A. W., Co., Texarkana, Ark.
 Johnson, J. D., Co., Pensacola, Fla.
 Johnson Hardware Co., Clarksburg, W. Va.
 Jones, John Paul, and Leonard Bindon, Seattle, Wash.
 Joplin Supply Co., Joplin, Mo.
 Kahn, Albert, Associated Architects & Engineers, Inc., Detroit, Mich.
 Kalispell Mercantile Co., Kalispell, Mont.
 Kansas City Pump Co., Kansas City, Mo.
 Keiser-Van Leer Association, Bloomington, Ill.
 Kennedy Co., Cleveland, Ohio.
 Kiefaber, W. H., Co., Dayton, Ohio.
 Kinder Plumbing Co., Inc., Webster, Mass.
 Kinsey, H. P., Co., Easton, Pa.
 Klebart Plumbing Supply House, Webster, Mass.
 Knapp Supply Co., Inc., Muncie, Ind.
 Knowles Fisher Corp., Gowanda, N. Y.
 Koehring Co., Milwaukee, Wis.
 Kohler Co., Kohler, Wis.
 Koller Brothers Co., Cleveland, Ohio.
 Kowalsky, Edw. J., Plumbing & Heating, Oxford, Mich.
 Levine, Samuel, New York, N. Y.
 Levy, Will, St. Louis, Mo.
 Long Supply Co., Chicago, Ill.
 Lorenz Co., Klamath Falls, Oreg.
 Lutz, Jimmy, Plumbing & Heating, Harrisburg, Pa.
 Lyon, A. E., Co., Glendale, Calif.
 Malone Plumbing Supply Co., Pittsburgh, Pa.
 Manchester Supply Co., Manchester, N. H.
 Mansfield Sanitary Pottery, Inc., Perryssburg, Ohio.
 McArdle & Cooney, Inc., Philadelphia, Pa.
 McArdle & Walsh, Inc., Baltimore, Md.
 McChung, C. M., & Co., Knoxville, Tenn.
 McGowin-Lyons Hardware & Supply Co., Mobile, Ala.
 McNeill, O. H., Plumbing & Heating Contractor, Herrin, Ill.
 Mechanical Construction Corp., Hibbing, Minn.
 Melching, Walter G., Newport, Ky.
 Meyer, F. & J., New York, N. Y.
 Michigan Supply Co., Lansing, Mich.
 Milane, J. Joseph, North Quincy, Mass.
 Milwaukee Flush Valve Co., Milwaukee, Wis.
 Missoula Mercantile Co., Missoula, Mont.
 Modern Plumbing & Heating Co., Grand Rapids, Mich.
 Monroe Co. of Boston, Boston, Mass.
 Moran, Clifford, Plumbing & Heating Service, Highland Park, Ill.
 Morley Brothers, Saginaw, Mich.
 Morrison Supply Co., Fort Worth, Tex.
 Muhlenberg Bros., Reading, Pa.
 Murphy Supply Co., Green Bay, Wis.
 Mutual Manufacturing & Supply Co., Cincinnati, Ohio.
 National Plumbing Pottery, Columbus, Ohio.
 Nelson, N. O., Co., St. Louis, Mo.
 Ohio Oil Co., Findlay, Ohio.
 Orange Memorial Hospital, Orange, N. J.
 Orlowitz, Louis B., Co., Philadelphia, Pa.
 O'Rourke, W. R., Co., Walla Walla, Wash.
 Otto, Henry W., Milwaukee, Wis.
 Paterson General Hospital, Paterson, N. J.
 Patterson, W. S., Co., Appleton, Wis.
 Patzig Testing Laboratories, Des Moines, Iowa.
 Pearce & Kerr, Baltimore, Md.
 Pennsylvania Railroad, Philadelphia, Pa.
 Pinski Bros., Inc., Great Falls, Mont.
 Pitt, Walter A., & Co., Bloomfield, N. J.
 Plimpton & Hills Corp., Hartford, Conn.
 Plumbers & Factory Supplies, Inc., Columbus, Ohio.
 Plumbers Supply Co., New Bedford, Mass.
 Poekert, R. A., Pittsburgh, Pa.
 Prier Brass Manufacturing Co., Kansas City, Mo.
 Providence Pipe & Sprinkler Co., Providence, R. I.
 Puritan Sanitary Supply Co., Cambridge, Mass.
 Raffel Supply Co., Chicago, Ill.
 Rapid Plumbing Co., Rapid City, S. Dak.
 Rayl Co., Detroit, Mich.
 Redmond, Geo., Cleveland, Ohio.
 Reeves-Wiedeman Co., Kansas City, Mo.
 Reger, Frank A., & Sons, Baltimore, Md.
 Ribber, George L., Detroit, Mich.
 Richmond Radiator Co., New York, N. Y.
 Roberts-Hamilton Co., Minneapolis, Minn.
 Robschung-Kiesling Contracting Corp., Houston, Tex.
 Rodgers Supply Co., McKees Rocks, Pa.

Royal Brass Manufacturing Co., Cleveland, Ohio.
 Ruby, William, & Sons, Indianapolis, Ind.
 Russell, Crowell, Mullgardt & Schwarz, St. Louis, Mo.
 St. Johns Episcopal Hospital, Brooklyn, N. Y.
 St. Louis, Board of Education, St. Louis, Mo.
 Sanitary Plumbing Co., Redlands, Calif.
 Schmidt, Garden & Erikson, Chicago, Ill.
 Scott, Charles B., Co., Scranton, Pa.
 Scovill Manufacturing Co., Waterville, Conn.
 Seaford Plumbing Supply Co., Seaford, Del.
 Sears, Roebuck & Co., Chicago, Ill.
 Seashore Supply Co., Atlantic City, N. J.
 Seattle Plumbing Supply Co., Seattle, Wash.
 Seckinger, M. O., Savannah, Ga.
 Shellady, Wm. D., Inc., Wilmington, Del.
 Sherwood Brass Works, Detroit, Mich.
 Shields Co., San Rafael, Calif.
 Shoemaker, Ted, Plumbing Co., Sebring, Fla.
 Sirmine, J. E., Co., Greenville, S. C.
 Smolka Co., Inc., New York, N. Y.
 South Plumbing Supply Co., Inc., Jamaica, N. Y.
 Southern Pacific Co., San Francisco, Calif.
 Southern States Supply Co., Columbia, S. C.
 Southern Supply Co., Inc., Baltimore, Md.
 Southside Plumbing & Heating Maintenance, Freeport, N. Y.
 Speakman Co., Wilmington, Del.
 Staub & Rafter, Houston, Tex.
 Sullivan County Plumbing & Heating Supply Co., Inc., Liberty, N. Y.
 Superior Sterling Co., Bluefield, W. Va.
 Taggart Plumbing Co., New York, N. Y.
 Tennessee Mill & Mine Supply Co., Knoxville, Tenn.
 Thompson-Durkee Co., Allston, Mass.
 Trant, Thomas, & Bro., Inc., Hartford, Conn.
 Treaty Co., Greenville, Ohio.
 Trumbull Plumbing Supply Co., Inc., Warren, Ohio.
 Tubular & Cast Products Manufacturing Corp., Brooklyn, N. Y.
 Turner & Van Scoy Co., Inc., Wilkes-Barre, Pa.
 Union Brass & Metal Manufacturing Co., St. Paul, Minn.
 U. S. Testing Co., Inc., Hoboken, N. J.
 Universal-Rundle Corp., New Castle, Pa.
 Valley Supply Corp., Neenah, Wis.
 Van Camp Hardware & Iron Co., Indianapolis, Ind.
 Van Denberg Supply Co., Rockford, Ill.
 Virginia Polytechnic Institute, Blacksburg, Va. (General support.)
 Wabash Railroad Co., St. Louis, Mo.
 Wahpeton Plumbing & Heating Co., Wahpeton, N. Dak.
 Walker Supply Co., Trenton, N. J.
 Warburton's, Madera, Calif.
 Waukesha Memorial Hospital, Waukesha, Wis.
 Weber, C. L., & Co., Inc., Philadelphia, Pa.
 Weekes, John, & Son Co., Watertown, N. Y.
 Westchester Square Plumbing Supply Co., Inc., Bronx, New York, N. Y.
 Western Electric Co., Inc., New York, N. Y.
 Western Metal Supply Co., San Diego, Calif.
 White & Shauger, Inc., Paterson, N. J.
 Whitney & Ford Co., Chicago, Ill.
 Wierman, Diller, Inc., Hanover, Pa.
 Wigman Co., Sioux City, Iowa.
 Wilcox, Crittenden & Co., Inc., Middletown, Conn.
 Willow Supply Corp., Bronx, New York, N. Y.
 Wisconsin River Supply Co., Wausau, Wis.
 Withey, Henry F., Sherman Oaks, Calif.
 Wolf, Louis G., Henderson, Ky.
 Wolverine Brass Works, Grand Rapids, Mich.
 Wood, Edward J., & Son, Clarksburg, W. Va.
 Woolcock Plumbing & Heating Co., Niagara Falls, N. Y.
 Worthen, A. B., Co., Methuen, Mass.
 Worthington, Geo., Co., Cleveland, Ohio.
 Young, W. B., Supply Co., Kansas City, Mo.
 Zimmerman Plumbing Supply Co., Inc., Staten Island, N. Y.

UNITED STATES GOVERNMENT

Agriculture, U. S. Department of, Division of Purchase, Sales and Traffic.
 Army, Department of the, Office of the Assistant Chief of Staff, Standards Branch.
 Interior, U. S. Department of the, Bureau of Indian Affairs.
 Veterans' Administration.